

AMENDMENTS TO CLAIMS

- 2 1. (Cancelled)

3 2. (Currently Amended): The molding tray of Claim 4 58 wherein said upper and lower

4 wells have approximately equal depths, measured from said upper surface of said peripheral

5 wall to said upper surfaces of said flanges, and said lower surface of said peripheral wall to

6 said lower surfaces of said flanges, respectively.

7 3. (Original): The molding tray of Claim 2 wherein said lower well has a shape generally

8 symmetric to that of said upper well.

9 4. (Canceled):

10 5. (Canceled):

11 6. (Canceled):

12 7. (Amended): The molding tray of Claim 6 58 wherein said openable means for sealing

13 said aperture bordered by inner facing edge walls of said flanges is further defined as

14 comprising in combination at least one break-away panel within said aperture which is joined

15 at outer peripheral edges thereof to inner peripheral edges of said flanges by frangible

16 members.

17 8. (Canceled):

18 9. (Currently Amended): The molding tray of Claim 8 58 wherein said protuberance rib is

19 located generally midway between longitudinally disposed sides of said upper well.

20 10. (Canceled):

21 11. (Currently Amended): The molding tray of Claim 6 58 wherein said openable means for

22 sealing said aperture bordered by inner facing edge walls of said flanges is further defined

23 as being an insert lodgeable in said aperture.

24 12. (Canceled):

25 13. (Currently Amended): The molding tray of Claim 42 11 wherein said protuberance rib

26 is located generally midway between longitudinally disposed sides of said upper well.

27 14. (Canceled):

- 1 15. (Currently Amended): The molding tray of Claim 6 58 further including at least two
2 abutment flanges, one each of which protrudes radially outwardly from each of two sides of
3 said peripheral wall of said tray.
- 4 16. (Original): The molding tray of Claim 15 further including releasable attachment means
5 for releasably attaching said tray to a second of said trays.
- 6 17. (Original): The molding tray of Claim 16 wherein said releasable attachment means is
7 further defined as comprising in combination a bracket protruding outwardly from a side of
8 said peripheral wall of said body, and a hinge mechanism means for pivotably coupling said
9 bracket of said tray to a bracket of a second tray to thereby enable pivotable relative motion
10 between said trays in a plane perpendicular to upper edge walls of said trays.
- 11 18. (Original): The molding tray of Claim 17 wherein said bracket is further defined as
12 protruding perpendicularly outwardly from a transversely disposed one of said abutment
13 flanges.
- 14 19. (Currently Amended): The molding tray of Claim 4 58 wherein said protuberances and
15 grooves are disposed perpendicularly to said upper surface of said elongated hollow body of
16 said tray.
- 17 20. (Original): The molding tray of Claim 19 wherein said grooves have an inverted wedge-
18 shape.
- 19 21. (Original): The molding tray of Claim 20 wherein said protuberances have a triangular
20 shape.
- 21 22. (Original): The molding tray of Claim 21 wherein said grooves are wider than said
22 protuberances.
- 23 23. (Currently Amended): The molding tray of Claim 4 58 wherein said upstanding peripheral
24 wall of said hollow body has a longitudinally elongated, generally rectangular plan-view shape.
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- 26 24. (Currently Amended): The molding tray of Claim 4 58 wherein said peripheral wall of
27 said hollow body has in plan-view a shape approximating that of a semi-ellipse.
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2 25. (Original): The molding tray of Claim 24 wherein said upper and lower wells each have
3 in plan-view the shape of a semi-elliptical sector.

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5 26. (Original): The molding tray of Claim 25 wherein said peripheral wall includes a generally
6 vertically disposed, semi-elliptically curved outer longitudinal wall segment, a semi-elliptically
7 curved inner longitudinal wall segment spaced radially inwardly of and parallel to said outer
8 wall segment, and a transversely disposed peripheral wall segment which coincides with a
9 minor axis of a semi-elliptical plan-view trace of said peripheral wall.

10 27. (Original): The molding tray of Claim 26 further including a semi-elliptically shaped web
11 section which joins inner facing vertical surfaces of said transverse and said inner longitudinal
12 wall segments.

13 28. (Currently Amended): A device for detaching a break-away panel part of a dental model
14 molding tray from a hollow body part of said tray which encloses said break-away panel, said
15 break-away panel being located between ~~and parallel to~~ upper and lower surfaces of said
16 body of said molding tray and being joined by frangible members to horizontally aligned flange
17 walls which protrude inwardly towards said panel from inner sides of a peripheral wall of said
hollow tray body, said device including;

18 a. a template comprising a body which includes,

19 (I) a base

20 (ii) a peripheral flange wall which protrudes upwardly from said base,

21 (iii) a recess formed between an upper surface of said base and inner surfaces
22 of said peripheral flange wall, said recess being of a proper size and shape
23 to vertically downwardly receive therein said hollow body of said tray, with
24 said lower surface of said tray body parallel to and above said upper
25 surface of said template base, and with outer upstanding surfaces of said
26 tray perimeter wall adjacent to said inner facing upstanding surfaces of said
27 peripheral flange wall of said template, and

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2 (iv) at least one rib-shaped lug which protrudes upwardly from said upper
3 surface of said template base, said lug having a flat upper surface which is
4 located a greater distance above said upper surface of said template base
5 than the distance between a lower surface of said break-away panel and
6 said lower surface of said hollow tray body, whereby said lug supports said
7 break-away panel to thereby locate said lower surface of said hollow tray
8 body above said upper surface of said template, and

9 b. force exerting means for exerting a downwardly directed force on ~~said body of said~~
10 ~~tray at least a first abutment flange which promotes outwardly from said tray body relative to~~
11 said template, whereby a reaction force is exerted upwardly on said break-away panel relative
12 to said tray body sufficient to break said frangible members joining said break-away panel to
13 said flanges, ~~said force exerting means including a knock-out tool which has a plurality of at~~
14 ~~least three circumferentially spaced apart, downwardly protruding lower abutment flange-~~
15 ~~contacting members for contacting an upper surface of said abutment flange of said tray, and~~
16 ~~an upper anvil surface rigidly coupled to said flange-contacting members and adapted to~~
17 ~~receive a downwardly directed impact.~~

18 29. (Canceled):

19 30. (Canceled):

20 31. (Canceled): .

21 32. (Original): The device of Claim 28 wherein said recess of said template is further defined
22 as having in plan-view the shape of a semi-ellipse.

23 33. (Original): A drilling alignment fixture for facilitating drilling blind bores for the receipt of
24 manipulating pins into bases of die segments of a dental model cast contained in a molding
25 tray, said alignment fixture comprising an elongated body which includes;

26 a. a base plate which has a generally flat lower surface and a generally flat upper
27 surface parallel to said lower surface, said upper surface having formed therein an elongated,
28 shallow recess which is adapted to receive vertically downwardly therein a lower portion of

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2 a molding tray, with a lower surface of said tray supported on said upper surface of said base
3 plate.

4 b. a drill guide bushing disposed through said upper and lower surfaces of said base
5 plate,

6 c. indexing means for visually aligning a vertical center line of said drill guide bushing
7 with a selected longitudinal position of a dental model casting contained in said tray said
8 position corresponding to a desired longitudinal location for drilling a pin bore into said dental
9 model cast, and

10 d. means for moving said tray horizontally on said upper surface of said base plate
11 to thereby align said selected location of said dental model cast with said indexing means and
12 said drill bit guide bushing.

13 34. (Original): The drilling alignment fixture of Claim 33 wherein said indexing means for
14 visually aligning a vertical center line of said drill bit guide bushing with a selected longitudinal
15 position of a dental model casting in said tray is further defined as an aperture through said
16 tray located below a void left in said cast by removal of die stone segment which is to have
17 a pin bore drilled in the base thereof.

18 35. (Original): The drilling alignment fixture of Claim 33 wherein said recess in said upper
19 surface of said base plate is further defined as being a generally rectangular shaped channel
20 which is adapted to longitudinally slidably receive a rectangular shaped dental modeling tray.

21 36. (Original): The drilling alignment fixture of Claim 33 wherein said base plate is further
22 defined as having a plan-view perimeter shaped generally like a semi-ellipse.

23 37. (Original): The drilling alignment fixture of Claim 36 wherein said recess in said upper
24 surface of said base plate is further defined as having a generally semi-elliptical plan-view
25 shape of the proper size and shape to vertically downwardly receive therein a semi-elliptically
26 shaped tray, with said upper surface of said base plate supporting a lower surface of said
27 tray.

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2 38. (Original): The drilling alignment fixture of Claim 37 wherein said base plate is further
3 defined as having through its thickness dimension a semi-elliptical sector-shaped aperture
4 which has an outer semi-elliptically shaped wall located radially inwardly of and generally
5 parallel to a perimeter of said base plate, and an inner semi-elliptically shaped wall located
6 radially inwardly of and generally parallel to said outer aperture wall, said aperture orbitally
7 holding said drill bit guide bushing.

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9 39. (Original): The drilling alignment fixture of Claim 38 further including a radially disposed
10 arm which has an inner radial end portion pivotably fastened to a lower surface of said base
11 plate, an outer radial portion which includes indexing means for aligning said arm with a
12 selected circumferential portion of said perimeter wall of said base plate, and an intermediate
13 portion which has therethrough a bore which receives therein a lower portion of said drill bit
guide bushing.

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15 40. (Original): The drilling alignment fixture of Claim 37 wherein said indexing means is further
16 defined as including a pointed end portion of said arm which is radially aligned with said
17 center line of said drill bit guide bushing and which protrudes radially outwardly of said base
plate.

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19 41. (Original): The drilling alignment fixture of Claim 40 wherein said indexing means is further
20 defined as a gnomon which protrudes perpendicularly upwardly from said pointed end portion
of said arm, in radial alignment with said center line of said drill bit guide bushing.

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22 42. (Amended): A slide receptacle for releasably holding a full-arch dental model tray and
23 cast and attaching the receptacle to an arm of an articulator apparatus, said slide receptacle
comprising;

- 24 a. a base plate,
25 b. means for releasably attaching a dental model tray containing a dental model cast
to said base plate,
26 c. means for releasably attaching said base plate to an arm of an articulator
apparatus, and

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2 d. whereby said dental model east tray is repeatedly fixable in a pre-determined
3 position on said articulator arm for proper occlusal relationship of said dental model cast to
4 an opposing arch, without requiring application of plaster or other attachment means to said
5 tray, and whereby said tray is removable from said receptacle and connectable via hinge
6 coupling means to comprise with an opposing dental model cast in an opposing tray an
7 articulatable full-mouth dental model not requiring use of said articulator apparatus.

8 43. (Original): The slide receptacle of Claim 42 wherein said means for releasably attaching
9 a dental model tray to said base plate is further defined as comprising in combination;

10 a. a horizontally disposed abutment flange which protrudes from a perimeter wall of
11 said base plate of said tray, and

12 b. means attached to said base plate for frictionally engaging said abutment flange
13 in response to sliding lower surface of said tray on an upper surface of said base plate.

14 44. (Original): The slide receptacle of Claim 43 wherein at least a portion of said base plate
15 thereof is further defined as having a semi-elliptical shape.

16 45. (Original): The slide receptacle of Claim 44 further including a plurality of indexing
17 members which protrude downwardly from a lower surface of said base plate.

18 46. (Original): The slide receptacle of Claim 45 wherein said means for releasably attaching
19 said base plate to an arm of said articulator apparatus is further defined as including a
20 ferromagnetic member recessed in a said lower surface of said base plate.

21 47. (Original): The slide receptacle of Claim 46 wherein said releasable attachment means
22 is further defined as a magnetic member attachable to said arm of said articulator apparatus.

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24 48. (Original): A method for manipulating a pair of opposed dental model casts held in
25 separate dental model trays comprising the steps of:

26 a. providing a separate receptacle for each of a pair of trays holding a master dental
27 model cast and an opposing dental model cast,

1 b. releasably attaching each of said trays holding master and dental model casts to
2 a separate one of said receptacles,
3
4 c. releasably attaching each of said receptacles to a separate one of an upper and
5 lower arm of a three-dimensional dental model laboratory articulator apparatus,
6
7 d. effecting relative movement between said arms of said articulator to confirm proper
8 occlusal relationship between a dental prosthesis fabricated from at least one of said dental
9 model casts,
10
11 e. removing said receptacles from said arms of said articulator,
12
13 f. removing said dental model casts and prostheses from said receptacles, and
14
15 g. attaching together said dental model trays holding said dental model casts and
16 said prosthesis by a hinge coupler which enables said master and opposing dental model
17 casts to be pivoted towards and away from one another, whereby occlusion of said dental
18 models and prosthesis may be viewed without requiring use of said articulator.

19 49. (Original): The method of Claim 48 wherein said receptacle slidably receives said dental
20 model tray.

21 50. (Original): The method of Claim 49 wherein said attaching of said receptacle to said
22 articulator arms employs means which enable a receptacle to be repeatedly attached to and
23 removed from said articulator arm at a precisely repeatable location.

24 51. (Original): The method of Claim 50 wherein said means enabling repeated removal and
25 re-attachment of said receptacle at a precisely repeatable location of said articulator arm is
26 further defined as including magnetically attachable means on said receptacle and said
27 articulator arm.

28 52. (Currently Amended): In a dental modeling tray for molding dental models, the
improvement comprising providing at least one protuberance elongated rib which protrudes
upwardly into an upper well portion of said tray adapted to receive molding material, whereby
a dental model molded from molding material introduced into said well has formed in a base
portion of said cast an upwardly protruding indentation having a an elongated shape

1 complementary to that of said protuberance rib, said indentation being of an appropriate size
2 and shape to serve as a pilot indentation for guiding into said base a point of a drill bit used
3 to form in said base a bore at a selected longitudinal location of said base for receiving a
4 manipulating pin.

5 63. (Currently Amended): The improvement of Claim 52 wherein said protuberance rib is
7 located generally midway between longitudinally disposed sides of said upper well.

8 54. (Currently Amended): The improvement of Claim 53 wherein said protuberance rib is
9 further defined as being a longitudinally elongated rib which is parallel to said longitudinally
10 disposed sides of said upper well.

11 55. (Currently Amended): In a method for molding dental models, the improvement
12 comprising molding into a base of said model an elongated indentation of an appropriate size
13 and shape to serve as a pilot indentation for guiding into said base a point of a drill bit used
14 to form in said base at a selectable longitudinal position within said indentation a bore for
15 receiving a manipulating pin.

16 56. (Currently Amended): The improvement of Claim 55 wherein said protuberance
17 indentation is located generally midway between longitudinally disposed sides of said upper
18 well model.

19 57. (Currently Amended): The improvement of Claim 56 wherein said protuberance
20 indentation is further defined as being a longitudinally elongated rib groove which is parallel
21 to said longitudinally disposed sides of said upper well base of said model.

22 58. (New): A molding tray for use in making a dental prostheses model from an impression
23 mold having formed therein imprints of a patient's teeth, said molding tray comprising;

24 a. an elongated hollow body having a lower surface, a peripheral wall which
25 circumscribes a hollow interior space of said body and protrudes upwardly from said lower
26 surface and which terminates in an upper surface, said peripheral wall including a pair of
27 longitudinally elongated, transversely spaced apart parallel longitudinal wall segments and a
28 pair of transverse end wall segments disposed transversely to said longitudinal wall segments,

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2 b. at least one pair of opposed internal flanges disposed between inner facing wall
3 surfaces of said peripheral wall, said flanges having generally flat, co-planar upper surfaces
4 disposed perpendicularly to said inner facing peripheral wall surfaces, said flanges having
5 between opposed inner facing edges thereof a longitudinally elongated aperture, and forming
6 between upper and lower surfaces of said body and inner wall surfaces of said upstanding
7 peripheral wall of said body, upper and lower wells, respectively, said longitudinal and
8 transverse end wall segments comprising a peripheral ring which encircles said upper and
9 lower wells,

10 c. openable means for sealing said aperture to thereby form with said flanges a
11 temporary base wall for said upper well adapted to receive and hold a liquid cast-forming,
12 molding material such as plaster-of-Paris or liquid die stone, said openable means having a
13 panel which fits conformally within said aperture and is removable therefrom, said panel having
14 a longitudinally elongated rib which protrudes upwardly from an upper surface thereof into said
15 upper well, whereby a dental model cast from liquid die stone poured into said upper well has
16 formed in a base portion of said cast an upwardly protruding indentation having a longitudinally
17 elongated shape complementary to that of said rib, said indentation being of appropriate size
18 and shape to serve as a pilot indentation for guiding into said base a point of a drill bit used
19 to form in said base a bore for securing a manipulating pin,

20 d. a plurality of longitudinally spaced apart protuberances which protrude inwardly from
21 inner surfaces of opposed sides of at least an upper portion of said peripheral wall of said body
22 adjacent to said upper well, said protuberances alternating with grooves formed between said
23 protuberances, and

24 e. whereby liquid die stone is introducible into said upper well and hardenable to
25 comprise a base of a dental model cast, said openable means for sealing said flange aperture
26 opened, an upwardly directed force is exerted on said base of said dental model cast to
27 thereby eject said cast from said molding tray, said dental model cast is segmented into
28 individual die segments, and said die segments re-inserted into said upper well of said tray to

1 predetermined horizontal index positions enabled by engagement of said protuberances and
2 grooves of said tray with complementarily shaped grooves and protuberances molded into
3 sides of said bases of said die segments, and to predetermined vertical index positions
4 enabled by abutment of lower surfaces of said die segments with upper surfaces of said
5 flanges.

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7 59. (New): The molding tray of Claim 58 wherein said lower well of said tray is of sufficient
8 depth to position above said lower surface of said tray lower surfaces of manipulating pins
9 which are optionally inserted into bores formed into bases of selected die segments.

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11 60. (New): The slide receptacle of Claim 43 wherein said means attached to said base plate
12 for fractionally engaging said abutment flange of said dental model tray is further described as
13 including a channel structure fixed to said base plate and forming therewith a channel having
14 an opening adapted to insertably receive said abutment flange of said base plate of said tray
in response to sliding said lower surface of said tray on said upper surface of said base plate.

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16 61. (New): The slide receptacle of Claim 60 wherein said channel structure is further defined
17 as comprising in combination a flange wall which protrudes upwardly from said upper surface
18 of said base plate, said flange wall having a lip which protrudes inwardly from an upper edge
19 of said flange wall towards a center of said base plate, said flange wall thereby forming with
20 said base plate a C-shaped cross section, open channel.

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22 62. (New): The slide receptacle of Claim 61 wherein said channel is further defined as having
23 a transversely disposed rear opening adjacent to a transversely disposed rear edge wall of
said base plate.

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25 63. (New): The slide receptacle of Claim 62 wherein said channel is further defined as
26 including a pair of laterally opposed side segments, said segments having rear portions which
are disposed forward of said rear transverse edge wall of said base plate.

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2 64. (New): The slide receptacle of Claim 63 further including a front abutment stop affixed
3 to said base for limiting forward sliding motion of said base of said tray to a predetermined
4 forward limit position.

5 65. (New): The slide receptacle of Claim 63 wherein said channel includes a front
6 transversely disposed segment.

7 66. (New): The slide receptacle of Claim 65 wherein said front transversely disposed channel
8 segment joins at laterally opposed outer portions thereof front portions of said laterally
9 opposed side channel segments.

10 67. (New): The slide receptacle of Claim 66 wherein said front and side channel segments
11 are joined together to form a continuous channel.

12 68. (New): The slide receptacle of Claim 67 wherein said channel has an arcuately curved
13 plan-view shape.

14 69. (New): The slide receptacle of Claim 68 wherein said channel has a semi-oval plan-view
15 shape.

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